OUTLINE

PROBLEMS WITH DUI DRUGS CASES

1. Lack of Research

2. Public perception: "What's the big deal"?

a. What's the big deal: "I use drugs and drive".

b. CSI effect: what are the limits?

c. Therapeutic amount

d. Impairment from levels alone

e. Societal warnings: Don't Drive and Drive vs. Use caution when driving.

3. **Police investigation**

a. Officers not trained for drug detection as well as they are for alcohol

b. Tools they have may be less useful: (PBT)

c. Not all of them are DREs

d. Lab can't test for all drugs

4. **Science of drugs**

a. Most people understand alcohol but may not understand drugs

b. Drugs and driving have not been studied the same as drugs and alcohol

DEALING WITH THE ISSUE

Lack of Research

1. Start with federal websites: NHTSA sheets: DEA, NIDA, then PDR then Wenk's

2. Talk to your lab people: even if they can't testify they can give you access to articles: Journal of Analytical Toxicology

3. Talk to you DRE: get matrix: use it.

4. Go to the internet: get someone to verify your research

5. Get an expert: send him articles, have him send you articles

Public perception

1. Start early: question jurors about drug use,

2. “Do you agree that a person should not drive a car while they are impaired no matter what they are impaired by?”

3. “If your doctor tells you to take medication, is it ok to drive if you are impaired by that medication?”

4. Levels alone: start early: opening statement” can’t tell impairment from levels alone but I will prove the defendant is impaired. How by symptoms, FST, bad driving.

a. If in a per se state, give the jury an out “you don’t have to tell impairment you only have to determine if D had a detectable amount” but beware of jury nullification arguments.

Police investigation

a. Again, your DRE is your best friend: even if he did not participate in the investigation have him review the reports etc and give you his opinion. Then decide if you want to call him as a witness.

b. Always try to get two blood draws. Expert should be able to give you rough retrograde extrapolation: so two tests even if drugs are at issue

c. McNeely: Be ready with a warrant

Science of drugs

1. Investigation is the key: you must have active proof of impairment, simply showing the jury a test result is not enough.

2. How did D do on FSTs? What bad driving did he do, did anyone else do that same bad driving at that location/time, if not what is the difference between the D and everyone else?

3. Do your homework: First find out what type of drug you are dealing with, what its symptoms are, what is the therapeutic range and how impairment manifests itself. (Europe v US (different levels are therapeutic).

4. Lab people, DREs and your expert

5. Have someone testify as to stats re: this drug and driving, if any

6. Dealing with defense experts

Always Defense expert questions

1. Being paid: how much (Paid witness versus lab tech)

a. "Did you talk to your client to find out what happened"

b. "Did you do an independent test"?

c. "Can a person be impaired by a drug if they are using the drug therapeutically"

d. "Is ___ a controlled substance?" What schedule is it" "Is it true that controlled substances are on the controlled substance list because they can impair people? So even at a therapeutic amount, a person can be impaired by a prescription drug, correct?"

e. "Mr. defense expert, if you can't tell the impairment from levels alone then you have to use other factors such as the ones gathered by the police (the D's appearance, his FSTs etc)."

YOUR CRIME LAB GIVES YOU A REPORT WITH THE FOLLOWING LEVELS.

Cocaine: 200 ng
Diazepam: 1000 ng.
Nordizepam: 50000 ng.
Pinacolyl methylphosphonofluoridate: 50 ng (Soman)

1. IMPAIRED BY COCAINE BUT NOT THE OTHERS
2. IMPAIRED BY THE PRESCRIPTION DRUGS B/C THE AMOUNT IS IN EXCESS OF THE THERAPEUTIC RANGE.
3. NOT IMPAIRED AT ALL
4. CAN'T TELL

SAMPLE: MARIJUANA

33 NG OF THC IN BLOOD
100 NG OF THC-CA IN BLOOD

1. YES, EVERYONE IS IMPAIRED AT THIS LEVEL
2. YES FOR THC BUT NO FOR THC-CA
3. NO FOR EITHER ONE
4. WHO CARES

Diazepam

Diazepam is a colorless, crystalline compound. Available primarily in tablet or liquid form.

Synonyms: 7-chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1,4-benzodiazepin-2-one; Valium®, Valrelease®, Vazepam®, Diaz Intensol®, Diastat®, Dizac®.

Sources: Diazepam is a Schedule IV controlled substance and is available by prescription in tablet, gel and injectable form. Valium® tablets are white (2 mg), yellow (5 mg) or blue (10 mg) round tabs with a cut out “V” design. Valium® Injectable is available in 5 mg/mL strength liquid.

Drug Class: Tranquilizer, sedative, CNS depressant.

Medical and Recreational Uses: Used medicinally in the management of anxiety disorders, as an adjunct for the relief of skeletal muscle spasm and for convulsive disorders/status epilepticus, and as a minor tranquilizer or sedative. Also used to suppress or dampen acute alcohol withdrawal, and anxiety-related gastrointestinal disorders such as stress ulcers. Diazepam is used recreationally as a sedative or to enhance the effects of alcohol or opioids. For example, administration of diazepam 30 minutes after a dose of oral methadone reportedly produces an augmented high. Diazepam is used by cocaine users to increase seizure threshold and by heroin users to enhance the effects of heroin, and by both of these users to reduce the impact of withdrawal symptoms between doses.

Potency, Purity and Dose: Commonly prescribed doses of Valium® are 5-40 mg daily. For anxiety, 2-10 mg is taken twice to four times daily; for alcohol withdrawal symptoms 10 mg is taken three to four times daily. For the injectable form, 2-20 mg is administered intramuscularly or intravenously. Street doses may consist of several tablets administered at once.

Route of Administration: Usually oral, but intravenous injection is possible after preparing a solution from crushed tablets. Commercially available liquid Valium® can be injected, and gel forms can be rectally administered.

Pharmacodynamics: Diazepam is a 1,4-benzodiazepine, which binds with high affinity to the GABA A receptor in the brain to reduce arousal and to affect emotions. Diazepam’s action causes an increase in affinity of the major inhibitory neurotransmitter, GABA. GABA binds mainly to the a subunit while diazepam binds to the b subunit. The g subunit is also essential for modulation of chloride transport by benzodiazepines. Diazepam increases chloride transport through ion-channels and ultimately reduces the arousal of the cortical and limbic systems in the CNS. Diazepam depresses the

electrical after-discharge in the amygdala and hippocampus regions of the limbic system that affect emotions.

Pharmacokinetics: Diazepam is rapidly absorbed. Oral bioavailability is approximately 100%, and close to 99% is bound in plasma. The half-life of diazepam is 43±13 hours, but ranges from 40-100 hours if the contribution from active metabolites is included. Diazepam is metabolized to nordiazepam which is an active metabolite with a half-life of 40-99 hours. Temazepam and oxazepam are minor active metabolites of diazepam. Diazepam is excreted in urine mainly as oxazepam conjugate (~33 %), and temazepam conjugate, with only traces of diazepam and nordiazepam.

Molecular Interactions / Receptor Chemistry: Diazepam is demethylated to nordiazepam via P450 2C19 and 3A4; and 3-hydroxylation to temazepam and oxazepam occurs via P450 3A4. Potential inhibitors of 2C19 and 3A4 could decrease the rate of diazepam elimination if administered concurrently, while potential inducers of these isoenzymes could increase the rate of elimination.

Blood to Plasma Concentration Ratio: *0.55 and 0.70 reported; 0.59 for nordiazepam.*

Interpretation of Blood Concentrations: Simple interpretation of blood concentrations without any knowledge of drug-taking history is ill advised. Given changing responses with repeated use and variability in response, blood concentrations will not provide a good indication of likely behavioral effects. Additionally, the long half-life of diazepam may cause accumulation to occur with repeated use. Blood concentrations may be several-fold higher after chronic use compared to single use, and there are significant increases in blood levels in the elderly

Therapeutic blood concentrations typically range from 0.1-1.0 mg/L. Single oral doses of 10 mg result in diazepam concentrations of 0.2-0.6 mg/L at 0.5-2 hours, while chronic doses of 30 mg produce steady state diazepam concentrations of 0.7-1.5 mg/L and nordiazepam concentrations of 0.35-0.53 mg/L. Plasma concentrations of 0.3-0.4 mg/L are recommended for anxiolytic effects, and > 0.6 mg/L for control of seizures. Higher concentrations might suggest misuse or abuse.

***Interpretation of Urine Test Results*:** Urine concentrations of metabolites are detectable for several days to weeks after last use. Urinary excretion of unchanged drug is less than 1%.

Effects: At low doses, diazepam is a moderate tranquilizer, causing sleepiness, drowsiness, confusion, and some loss of anterograde memory. At high doses, excitement, disinhibition, severe sedation, and effects on respiration occur, particularly if respiration is impaired by other drugs or by disease. Diazepam can produce a state of intoxication similar to that of alcohol, including slurred speech, disorientation, and drunken behavior.

Side Effect Profile: Side effects may include dry mouth, blurred or double vision, headache, vertigo, urinary retention, excessive perspiration, nausea and vomiting, ataxia, tremor, depression, hypotension and diminished reflexes. The elderly are more likely to develop significant adverse CNS effects from the use of diazepam. In overdose, paradoxical reactions of anxiety, insomnia, stimulation, hallucination, and acute hyperexcited state may occur. Shallow breathing, clammy skin, dilated pupils, weak and rapid pulse, coma, and death are possible.

Duration of Effects: Dose-dependent, however, with therapeutic doses onset of effects occurs within 30 minutes and significant effects can last for 12-24 hours.

Tolerance, Dependence and Withdrawal Effects: Regular use will produce tolerance to most of the sedative and adverse effects, but tolerance may not occur for the anxiolytic benefits of diazepam. Tolerance may take several weeks or months to develop depending on dose and frequency of administration. Diazepam is capable of causing mild physical and psychological dependence and is regarded as having a significant abuse potential. Abstinence or abrupt withdrawal may produce excitement, restlessness, dysphoria, anxiety, apprehension, fearfulness, dizziness, headache, muscle stiffness, tremors, insomnia, and sensitivity to light and sound. More severe symptoms may include intense rebound nausea, vomiting, abdominal cramps, delirium, hallucinations, hyperthermia, sweating, panic attacks, confusional or paranoid psychoses, tachycardia, increased blood pressure, and occasionally seizures or convulsions.

Drug Interactions: Other benzodiazepines, alcohol, phenothiazines, narcotic analgesics, barbiturates, MAOI's, and other CNS depressants may potentiate action of diazepam. Alcohol enhances such effects as drowsiness, sedation, and decreased motor skills, and can also exacerbate the memory impairing effects of diazepam. Cimetidine delays clearance of diazepam. Valproate may potentiate the CNS depressant effects. Theophylline has an antagonistic action to some of the deleterious effects of diazepam.

Performance Effects*:* Laboratory studies have shown that single doses of diazepam (5-20 mg) are capable of causing significant performance decrements, with maximal effect occurring at approximately 2 hour post dose, and lasting up to at least 3-4 hours. Decreases in divided attention, increases in lane travel, slowed reaction time (auditory and visual), increased braking time, decreased eye-hand coordination, and impairment of tracking, vigilance, information retrieval, psychomotor and cognitive skills have been recorded. Lengthened reaction times have been observed up to 9.5 hours post dose. Lethargy and fatigue are common, and diazepam increases subjective perceptions of sedation. Such performance effects are likely to be exacerbated in the elderly. In drug users, diazepam has greater behavioral changes, including subjects' rating of liking and decrements in psychomotor and cognitive performance. Reduced concentration, impaired speech patterns and content, and amnesia can also be produced, and diazepam may produce some effects that may last for days. Laboratory studies testing the effect of ethanol on subjects already using benzodiazepines demonstrate further

increases in impairment of psychomotor and other driving skills, compared to either drug alone.

Effects on Driving: The drug manufacturer suggests patients treated with diazepam be cautioned against engaging in hazardous occupations requiring complete mental alertness such as driving a motor vehicle. Simulator and driving studies have shown that diazepam produces significant driving impairment over multiple doses. Single doses of diazepam can increase lateral deviation of lane control, reduce reaction times, reduce ability to perform multiple tasks, decrease attention, adversely effect memory and cognition, and increase the effects of fatigue. Significant impairment is further increased when diazepam is combined with low concentrations of alcohol (0.05 g/100 mL). A number of epidemiological studies have been conducted to evaluate the risk of crashes associated with the use of diazepam and other benzodiazepines. These show a range of relative risk, but most demonstrate increases in risk compared to drug free drivers. These increases have been twice to several fold. The elderly may have an increased risk of a motor vehicle crash.

DEC Category: CNS depressant

DEC Profile: Horizontal gaze nystagmus present; vertical gaze nystagmus present in high doses; lack of convergence present; pupil size normal; reaction to light slow; pulse rate down; blood pressure down; body temperature normal. Other characteristic indicators may include behavior similar to alcohol intoxication without the odor of alcohol, staggering and stumbling, lack of balance and coordination, slurred speech, disorientation, and poor performance on field sobriety tests.

Panel's Assessment of Driving Risks: The incidences of diazepam in drivers involved in road crashes and in drivers suspected of being under the influence, suggest an adverse effect of diazepam on road safety. Data are available to demonstrate that single therapeutic doses of diazepam can significantly impair psychomotor skills associated with safe driving, with some effects still observable the morning after a nighttime dose.

SAMPLE QUESTIONS FOR WITNESSES RELATING TO A BLOOD DRAW.

QUESTIONS FOR OFFICER WHO HAD BLOOD TEST DONE

1. Was the Def given a blood test in this case?

2. Where was the test draw done?
(Jail or hospital)

3. Who did the blood draw?
(Nurse) (Note: this may lead to a hearsay objection so have Officer tell why he thought she was a nurse).

4. Did you observe the blood draw occur
(Yes)

5. What did the nurse do to withdraw the blood?
(Needle in arm)

6. What did the nurse place the withdrawn blood into?
(Glass vials)

7. What did you do with the vials after the nurse gave them to you?
(Put vial into cardboard kit and sealed kit)

8. Before being given to you, were the vials ever out of your sight
(No)

9. What did you do with the blood kit after you got it from the nurse?
(Officer kept it until it is placed in a locked refrigerator at jail)

10. This locked refrigerator, does the public have access to it.
(No, it is secured at the jail).

11. Did you bring that blood kit with you?
(Officer is subpoenaed to bring in blood kit)

12. Please hand the blood kit to the Court Clerk to be marked (or have blood marked before court).

13. How do you know that this blood kit pertains to this Def?

(Officer writes his name and initials on box and on vials, also defendant's name is on kit)

14. Officer I see that there is an event number on the outside of this box. Is that event number unique to this defendant?

15. Is this kit in substantially the same condition as when you saw it last
(Other than being opened and resealed by lab)

16. Officer, please open the kit
(Ask defense if they want kit opened. Sometimes they will waive this).

17. What is that inside the kit?
(The vials with the defendant's blood)

18. How do you know that this blood vial pertains to this defendant?
(Officer initials vial before putting it into kit)

19. Are these vials in substantially the same condition as when they were placed into the kit by you?
(Yes except one vial has been opened and resealed by lab for testing)

20. Move to admit kit and vials
(Defense may object. If court sustains, move to readmit blood kit and vials after chemist has testified [see question #28 below]).

QUESTIONS FOR NURSE WHO DREW BLOOD

1. Please state your name

2. By who are you employed

3. How long have you been so employed?

4. What are your duties?

5. By whom are you licensed or certified to perform these duties
(State Board of Nursing or other appropriate State agency)

6. Is part of your duties the drawing of blood from a person for later testing?

7. On _____, did you draw the blood of _____?
(Note: if nurse doesn't remember blood draw [very likely as nurse does thousands of draws] have him/her ID her report and admit as past recollection recorded)

8. When you drew ____'s blood did you do so in a medically acceptable manner?
(Yes)

9. Did you use any alcohol solutions or swabs when you drew _____'s blood?
(Need this if a combined drugs and alcohol case: the swabbing solution contains no alcohol)

10. What did you do with the blood when you withdrew it from the Defendant's arm?
(Put it into a vial) (Note nurse should draw two vials of blood).

11. After placing the blood into the vial, what did you do with the vial?
(Gave it to the police officer)

12. Did you mark the vials or the box in any way for identification?
(Nurse sometimes marks vials)

13. Did anything happen to the vials or box between the time you drew the blood and gave them to the Officer
(No, matter of seconds)

14. Can you identify the State's Exhibit____, How do you know that this vial and box go to this Defendant
(If nurse wrote on vials she can ID them. If she did not, do not ask this question)

QUESTIONS FOR CHEMIST WHO ANALYZED DEFENDANT'S BLOOD

1. Please state your name

2. By who are you employed

3. How long have you been so employed?

4. What are your duties?

5. Have you ever qualified in court as an expert in the testing of blood to determine its alcohol or drug content? If so, when did you so qualify?

6. What specialized education/ training/ experience have you received that qualifies to analyze blood to determine its alcohol content

7. As part of your duties with do you analyze blood to determine its alcohol/controlled substance content?

8. What test do you use to analyze the blood?
(Gas Chromatograph)

9. What type of blood do you analyze?
(Whole Blood i.e. blood had not broken down into component parts)

10. What safeguards to you follow to ensure the accuracy of your tests?
(Two tests done, machine calibrated after each test)

11. Do these safeguards ensure that your test result is accurate?

12. How many times do you test the blood?
(Two)

13. Showing you what has been marked as State's Exhibit ___, can you id this box
(Yes, I tested this blood sample)

15. Was the box sealed when you first saw it?
(This is most important question for chain of custody. Normally, you won't have the courier testify so you must show that blood was sealed when it went from refrigerator to lab. Note: if defendant argues that blood may not have been refrigerated, chemist will have to testify that heated blood will not affect drug level or will lower level).

16. Did you open the box and vial to test the blood

17. Did you test the blood in this vial?

18. How do you know that you tested the blood in this vial?
(My initials are on box)

19. Whose blood is in this vial?
(Defendant's name on box [put there by officer] and box sealed)

20. Does this box have an event number on it?

21. Are these event numbers unique to each case?

22. Did you reseal the box after you were done testing the blood?

23. What did you do with the resealed box after you were done with it?
(Back into refrigerator at lab where Officer/Trooper picks it up or it is put in sealed storage cabinet)

24. How did you record the results of your test?
(In a report)

25. Is this the report you prepared in this case?
(Yes)

26. Judge, we would move to admit the declaration.
(If defense successfully objects to admission of the report then go to next question. Even if reports is admitted, ask next question)

27. What result did you obtain when you tested the Defendant's blood?

28. Judge we would move to admit the blood kit and blood vials into evidence.
(If defense had successfully objected to the admission of the blood kit and vials earlier, you will need to ask this question to have them readmitted).